FEMA

State of Minnesota

COOPERATING TECHNICAL PARTNERS MAPPING ACTIVITY STATEMENT

Mapping Activity Statement No. 2005-02 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data Olmsted County

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated February 5, 2005 between State of Minnesota and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 2005-02 is as follows.

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Olmsted County. The DFIRM, FIS report and data will be produced in the FEMA Countywide Format. The data will be in NAVD88.

Existing GIS data and study needs for the community will be researched, obtained, organized and provided in accordance with Activity 1. Scoping will be necessary to determine the final scope of work for this project.

In addition the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in the table 1-1 by flooding source and county.

Table 1-1

Flooding Source	Reach Length	Detail Hydrology	Detail Hydraulics	Limited Detail	Refine-Establish Zone A
N Br Root River, Stewartville	3 miles	X	X		
Hadley Valley Creek	5 miles	X	X		
Badger Run	6 miles	X	X		
Silver Creek	4 miles	X	X		
Mill Creek, Chatfield	2 miles	X	X		
South Fork of the Whitewater River, Dover	2 Miles	X	X		

This Flood Map Project will be completed by the following

- Minnesota Department of Natural Resources (MnDNR) through Olmsted County;
- CTP contractor
- FEMA/RMC5

The CTP shall notify FEMA and the NSP by e-mail of all meetings with community officials at least one week prior to the meeting (with as much notice as possible). FEMA and/or the NSP may or may not attend the community meetings

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table 1-2. The sections of this MAS that follow the table below describe the specific activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

Table 1-2

Activities	CTP	FEMA
Activity 1 – Scoping	X	
Activity 2 – Outreach	X	
Activity 3 – Field Surveys and Reconnaissance	X	
Activity 4 – Topographic Data Development	X	
Activity 5 – Independent QA/QC Review of Topographic Data		X
Activity 6 –Hydrologic Analyses	X	
Activity 7–Independent QA/QC Review of Hydrologic Analyses	X	
Activity 8 – Hydraulic Analyses	X	
Activity 9 – Independent QA/QC Review of Hydraulic Analyses		X
Activity 10 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	X	
Activity 10A – Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	X	
Activity 10B – Floodplain Mapping (Refinement or Creation of Zone A)	X	
Activity 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	X	X
Activity 12 – Base Map Acquisition)	X	X
Activity 13 – DFIRM Production (Non-Revised Areas)	X	X
Activity 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	X	X
Activity 14 – DFIRM Production (Merge Revised and Non-Revised Information)	X	X
Activity 14A – Application of DFIRM Graphic and Database Specifications	X	X

Activities	CTP	FEMA
Activity 14A – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	X	X
Activity 15 – Preliminary DFIRM and FIS Report Distribution		X
Activity 16 – Post-Preliminary Processing		X

FEMA has developed tools to assist in the development of the flood hazard data studies and the Digital Flood Insurance Rate Maps (DFIRM's) if the CTP wishes to use them. FEMA will, through the NSP, provide all CTP's access to and training in these tools. The tools available at this time include WISE software and the DFIRM production tools. The use of these tools will improve the Map Modernization and efficiency of all mapping partners.

The Data Capture Standard submittals will be required at the following study milestones:

- Project Scoping (as specified)
- Field Survey Completed
- Hydrology Completed (draft and final)
- Hydraulics Completed (draft and final)
- DFIRM Mapping (draft and preliminary)

QA/QC review activities may be performed by CTP's or the NSP at the discretion of FEMA. DNR Waters will be reviewing the hydrologic analysis. Olmsted County will contract for independent QA/QC review of DFIRM product meeting FEMA graphic and database specifications. Please note the NSP will also be performing periodic audits and overall study/project management to ensure study quality.

FEMA will be providing download/upload capability for intermediate data submittals through the Management Information Portal (MIP). Data submittals uploaded via the MIP, will include the same data required prior to the existence of the MIP.

Activity 1 – Scoping

Responsible Mapping Partner: MnDNR Waters and Olmsted County

Scope: This task involves collecting data from a variety of sources including community surveys, other Federal and State Agencies, NFIP State Coordinators, Community Assistance Visits (CAV's) and FEMA archives. DNR Waters will evaluate the effective FIS report and FIRM maps to see if it needs to be updated. Lists of mapping needs will be obtained from the MNUSS database, community surveys and CAV's if available.

Data collection will include obtaining the best available base map materials (corporate limits, roads, orthophotos, etc) along with stream centerline files. The acquired data will be imported into the scoping tool and used during the Scoping Task. In the Scoping Tool all streams should have unique names, the limits of the effective FEMA studies should be identified, LOMC areas should be identified, and

community requests should be identified. This task also includes populating the streamlines with existing pipeline and scoped studies currently underway.

In cooperation with the FEMA Region, a Project Management Team will be established consisting of the DNR Waters Floodplain Mapping Engineer, FEMA's regional engineer, staff from Olmsted County Planning and GIS, and other appropriate officials. The Project Management Team will be responsible for coordinating the activities of this project and completing all tasks identified in this Statement of Work.

Preliminary Research Activities can be separated into two categories—researching effective information and researching available data for the Flood Map Project. The following tasks shall be completed to research effective information: inventory DNR Waters files for effective FIRM panels, FRFM panels, FIS reports, and other flood hazard data or existing study data; summarize the information in the MNUSS database; summarize contiguous community agreement checks; review CAV and CAC files; and develop a "scoping map" and an overview of the results of the research. The NSP shall provide a list of data in the FEMA archive for Olmsted County and the communities within Olmsted County.

Olmsted County will co-ordinate, set-up, and hold the Scoping Meeting. This includes identifying a time, place, and all participants. The purpose of this meeting is to present the current information to the local officials (state, county and municipal) and coordinate on prioritization and identification of study areas. DNR Waters shall be responsible for compiling the necessary information for the meeting. These items may include: FIS and FIRM for affected communities; USGS quads for the study area; best available community base map(s); effective FIRM summary; Available Data Inventory; Scoping Map; Scoping Meeting Agenda/Minutes form; Aerial photos/topographic mapping if available; existing drainage studies or other H&H data; Community master plan(s)/Drainage Master Plan(s); Zoning Maps; Street Maps; As-built plans; and Floodplain Ordinance(s).

The project management team shall review the initial mapping needs list, review the research findings, and make selections of proposed methods for obtaining/producing flood data. Any additions or changes to the needs list shall be discussed with all members. All needs shall also be prioritized. In general, highest priority shall be given to the following areas: areas of dense existing or anticipated development, including areas where new road crossings have been constructed over stream(s); areas affected by flood-control structures and/or channelization; areas where natural physical changes in the floodplain have been significant (due to subsidence or extreme erosion, for example); areas that were studied by approximate methods and unmapped areas, especially those with development pressure; areas where the community has experienced flooding outside mapped floodplains, with severe damage to buildings and/or infrastructure; areas where mapped flood hazards do not match those shown on contiguous FIRMs (unless those FIRMs are not considered to be accurate); and areas where flood data (BFEs, floodplains, and regulatory floodways) are likely to be changed the most by a restudy.

Based on the discussion of mapping needs, Olmsted County staff, the DNR Waters Floodplain Mapping Engineer and FEMA Project Officer will finalize the areas to be included in the project (based on recommendations provided by the Project Team). Areas to be studied by detailed and approximate methods shall be identified. The following issues will be discussed and refined: Review and Refinement of Flood Hazard Identification Methodologies, Review of Proposed Paneling Scheme, Review and Refinement of Base and Topographic Map Source, and Finalization of Map Production and Database Options.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5.

Deliverables:

- The Final Scoping Report with all of the components as laid out in the attached "Partner Flood Map Modernization Program Scoping Report" template in Appendix A will be delivered in accordance with the schedule outlined in Section 6 for this Activity to the Regional Project Officer for approval.

- QA/QC Plan for the review of the mapping project is outlined in this MAS. This will include the checklists developed for that review.

Activity 2 – Outreach

Responsible Mapping Partner: MnDNR Waters and Olmsted County

Scope: The outreach activities for a Flood Map Project can best be understood as a process that begins during the Project Scoping phase and continues through the Map Production and Post-preliminary phases. A regulatory overview of required activities is followed by a description of tools that can be used in working with stakeholders to keep them informed and to solicit their input.

The overarching goal for conducting outreach is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the Project Team in responding to congressional inquiries.

Olmsted County will work with the DNR Waters Floodplain Mapping Engineer during the initiation of this activity to determine an Outreach Plan for implementation throughout the Mapping Project. DNR Waters will communicate the outreach activities to the FEMA Regional Office. The Regional Office will have access to many outreach tools that have been developed for this process that can be utilized or customized for your use.

All communication with local governments will be done in accordance with Title 44 Code of Federal Regulations Part 66.

Standards: All work under Activity 2 shall be performed in accordance with the standards specified in Section 5.

Deliverables: Upon determination of an Outreach and Coordination Approach the Olmsted County and DNR Waters shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 for this Activity:

- A report detailing outreach and coordination activities

- Backup or supplemental information used in writing this report

- At the completion of the DFIRM process, DNR Waters will submit a summary of outreach activities and any changes made in the outreach approach based on the actual implementation

Activity 3 - Field Surveys and Reconnaissance

Responsible Mapping Partner: MNDNR through Olmsted County's contractor

Scope: To supplement any field reconnaissance conducted during the Project Scoping phase of this project, Olmsted County's CTP contractor shall conduct a detailed field reconnaissance of the specific study area to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood-control structures, apparent maintenance or lack thereof of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses.

In addition to the initial field reconnaissance, the CTP contractor shall conduct field surveys, including obtaining channel and floodplain cross sections, identifying or establishing Temporary Bench Marks, and obtaining the physical dimensions of hydraulic and flood-control structures. The CTP contractor also shall coordinate with other Mapping Partners that are collecting topographic data under Activity 4.

Standards: All work under Activity 3 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, MnDNR Waters through Olmsted County shall make the following products available to FEMA by uploading the digital data to the Multi-Hazard Information Platform (MIP) or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.
- NSP Format Survey Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 4 - Topographic Data Development

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: Olmsted County shall provide access to existing topographic data of the overbank areas of the flooding sources studied to delineate floodplain boundaries. Olmsted County shall gather information on what topographic data is available for the given community and what accuracy and currency it meets. Olmsted County and/or the CTP contractor shall use the best available topographic data meeting FEMA standards or as directed by the Regional Project Officer.

Activity 6 – Hydrologic Analyses

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: MnDNR Waters shall perform hydrologic analyses for the lakes listed in table 1-1. MnDNR Waters through the Olmsted County CTPcontractor shall perform hydrologic analysis for the rivers and streams listed in Table 1-1. For detailed study reaches the CTP contractor shall calculate peak flood discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events using the XP-SWMM, HEC-HMS or TR-20 computer program. These flood discharges will be the basis for subsequent hydraulic analyses under Activity 8. In addition, the MnDNR Waters through the Olmsted County contractor shall address all concerns or questions regarding Activity 4 that are raised during the independent QA/QC review performed by DNR Waters during the QA/QC review under Activity 7.

If Geographic Information System (GIS)-based modeling is used, the MnDNR Waters through the Olmsted County contractor shall document automated data processing and modeling algorithms and provide them to FEMA to ensure they are consistent with the standards outlined above. Digital datasets (such as elevation, basin, or land use data) are to be documented and provided to FEMA for approval before performing the hydrologic analyses to ensure the datasets meet minimum requirements. The CTP contractor shall perform regression analyses for the limited detailed study reaches. The 1-percent – annual-chance storm event will be analyzed.

Standards: All work under Activity 6 shall be performed in accordance with the standards specified in Section 5.

Deliverables: Upon completion of hydrologic modeling for the detailed study reaches, MnDNR Waters through the Olmsted County contractor shall submit the data by digital media to DNR Waters and upload the digital data to the MIP if the MIP is available, so that DNR Waters can access it for an independent QA/QC review under Activity 7. The CTP contractor shall submit the results of the hydrologic analyses to MnDNR Waters for the lake flooding sources for final QA/QC review at the completion of the activity.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, for the detailed study reaches the CTP contractor shall make the following products available to FEMA by submitting it to the FEMA Regional Office via the digital media identified in the paragraph above, if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;
- Digital Summary of Discharges Tables presenting discharge data for the flooding sources for which hydrologic analyses were performed;
- Digital draft text for Section 3.1, Hydrologic Analyses, of the FIS report; and
- Digital versions of all backup data used in the analysis, including work maps.
- NSP Format Hydrology Database or Data Delivery consistent with the NSP Data Capture Standards –Appendix N of the Guidelines and Specifications for Flood Mapping Partners
- For GIS-based modeling, deliverables shall include all input and output data, intermediate data processing products, and GIS data layers.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 7 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: MnDNR Waters

Scope: MnDNR Waters shall review the technical, scientific, and other information submitted by the CTP contractor under Activity 6 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:

- Use of acceptable models;
- Use of appropriate methodology(ies);
- Correctly applied methodology(ies)/model(s), including QC of input parameters;
- Comparison with gage data and/or regression equations, if appropriate; and
- Comparison with discharges for contiguous reaches or flooding sources.

- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Activity 7 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, DNR Waters shall make the following products available to FEMA by uploading the digital data to the Multi-Hazard Information Platform (MIP) or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity.

- A Summary Report that describes the findings of the independent QA/QC review and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 8 – Hydraulic Analyses

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: The MnDNR CTP through Olmsted County contractor shall perform detailed study hydraulic analyses for the flooding sources listed in Table 1-1. The modeling will include the 10-, 2-, 1-, and 0.2-percent-annual-chance events based on peak discharges computed under Activity 6. The hydraulic methods used for this analysis will include HEC-RAS or XP-SWMM.

The MnDNR CTP through Olmsted County contractor shall use the cross-section and field data collected under Activity 3 or existing data of equivalent caliber to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

The MnDNR CTP through Olmsted County contractor shall use the FEMA CHECK-RAS checking program to check the reasonableness of the hydraulic analyses if HEC-RAS is used. To facilitate the independent QA/QC review under Activity 9, the MnDNR CTP through Olmsted County contractor shall provide explanations for unresolved messages from the CHECK-RAS program, as appropriate. In addition, the MnDNR CTP through Olmsted County contractor shall address all concerns or questions regarding Activity 6 that are raised by FEMA during the independent QA/QC review under Activity 9.

Standards: All work under Activity 8 shall be performed in accordance with the standards specified in Section 5.

Deliverables: Upon completion of hydraulic modeling for the detailed study reaches listed earlier in this MAS, the CTP contractor shall upload the digital data to the MIP or submit by using other digital media if the MIP is unavailable, so that FEMA can access it for the independent QA/QC review under Activity 9. The CTP contractor shall submit the results of the hydraulic analyses for the remaining flooding sources for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the MnDNR CTP through Olmsted County contractor shall make the following products available to FEMA submitting it to the FEMA Regional Office via the digital media identified in the paragraph above, if the MIP is unavailable. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Digital profiles of the 10-, 2-, 1- and 0.2-percent-annual-chance water-surface elevations representing existing conditions using the FEMA RASPLOT program or similar software;
- Digital Floodway Data Tables for each flooding source that is compatible with the DFIRM database;
- Digital hydraulic modeling (input and output) files;
- Digital tables with range of Manning's "n" values;
- Explanations for unresolved messages from the CHECK-RAS program, as appropriate;
- Digital versions of all backup data used in the analyses;
- Digital versions of draft text for inclusion in the FIS report.
- NSP Format Hydraulic Database or Data Delivery consistent with the NSP Data Capture Standards –Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 9 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: MnDNR

Scope: The MnDNR shall review the technical, scientific, and other information submitted by the CTP contractor under Activity 8 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. If MnDNR utilizes a contractor to perform the QA/QC, the contractor shall not be the same one who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:

- Use of acceptable model(s);
- Starting water-surface elevations;
- Cross-section geometry;
- Manning's "n" values and expansion/contraction coefficients;
- Bridge and culvert modeling;
- Flood discharges;
- Regulatory floodway computation methods; and
- Tie-in to upstream and downstream non-revised Flood Profiles.
    - Use the CHECK-2 or CHECK-RAS program as appropriate to flag potential problems and focus review efforts.

- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Activity 9 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, The MnDNR shall make the following products available to FEMA by uploading the digital data to the Multi-Hazard Information Platform (MIP) or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity.

- A Summary Report that describes the findings of the independent QA/QC review; and

- Recommendations to resolve any problems that are identified during the independent QA/QC review.

- If the data changed during the QA/QC process under Activity 7 or this Activity, then the updated and verified deliverables from Activity 6 and 8 will be resubmitted at this time.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 10 - Floodplain Mapping (Detailed Riverine or Coastal Analysis)

Responsible Mapping Partner: MnDNR CTP through Olmsted County contractor

Scope: The MnDNR CTP through Olmsted County contractor shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) for the flooding sources for which detailed hydrologic, and/or hydraulic analyses are performed. The CTP contractor shall incorporate all new or revised hydrologic and hydraulic modeling and shall use the topographic data provided by Olmsted County under Activity 4 to delineate the floodplain and regulatory floodway boundaries on a digital work map. In addition, the CTP contractor shall incorporate the results of all effective Letters of Map Change (LOMCs) within the revised areas as appropriate. Also, CTP contractor shall address all concerns or questions regarding Activity 10 that are raised by FEMA during the independent QA/QC review under Activity 11.

Activity 10B - Floodplain Mapping (Refinement or Creation of Zone A)

Responsible Mapping Partner: MnDNR CTP through Olmsted County contractor

Scope: The MnDNR CTP through Olmsted County contractor shall delineate the 1-percent-annual-chance floodplain boundaries for the limited detailed flooding sources listed earlier in this MAS or in the Scoping Report. The CTP contractor shall use existing topographic data or the topographic data acquired under Activity 2 to delineate the floodplain boundaries on a digital work map. In addition, CTP contractor shall address all concerns or questions regarding Activity 10B that are raised by DNR Waters during the independent QA/QC review under Activity 11.

The CTP Contractor may expand on the approaches for analyzing Zone A areas outlined in *Guidelines and Specifications for Flood Hazard Mapping Partners* and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with the DNR Waters Floodplain Mapping Engineer identified in Section 12 of this MAS before analysis and mapping begin.

Standards: All work under Activity 10, 10A, and 10B shall be performed in accordance with the standards specified in Section 5.

Deliverables for Activities 10 / 10A / 10B: Upon completion of floodplain mapping for the sources listed in the table in Section 1, the CTP contractor shall upload the digital data to the MIP or submit by using other digital media if the MIP is unavailable, so that DNR Waters can access it for the independent QA/QC review under Activity 11. The mapping for the remaining flooding sources is to be submitted for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the CTP contractor shall make the following products available to by submitting it to the FEMA Regional Office via the digital media identified in the paragraph above, if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined under Activity 9; and
- An explanation for the use of existing topography for the studied reaches, if appropriate.
- Digital work maps showing the 1-percent-annual-chance floodplain boundary delineations, flood insurance risk zone labels, and all applicable base map features;
- Written summary of the analysis methodologies;
- Any backup or supplemental information, including supporting calculations and assumptions for any computed 1-percent-annual-chance water-surface elevations used in the mapping required for the independent QA/QC review under Activity 11;
- Digital versions of input and output for any computer programs that were used;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the floodplain mapping tasks;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- NSP Format Mapping Database or Data Delivery consistent with the NSP Data Capture Standards –Appendix N of the Guidelines and Specifications for Flood Mapping Partners
- If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 11 - Independent QA/QC Review of Floodplain Mapping (Revised Areas)

Responsible Mapping Partner: FEMA and DNR Waters through the CTP Contractor

Scope: DNR Waters through the CTP Contractor shall review the floodplain mapping submitted by the CTP contractor under Activities 10, 10A, and 10B to ensure that the results of the analyses performed are accurately represented. The staff performing the QA/QC, shall be independent of the staff who performed the original analyses. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review the floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.
- Review the DFIRM mapping files to ensure they were prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- Review the metadata files to ensure they include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 11 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, DNR Waters shall make the following products available to FEMA by uploading the digital data to MIP or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity.

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated work map with all questions and/or concerns indicated, if necessary.
- If the data changed during the QA/QC process, then the updated deliverables from Activity 10, 10A and 10B will be resubmitted at this time.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 12 - Base Map Acquisition

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: Activity 12 consists of obtaining the digital base map, for the project. Olmsted County shall provide the digital base map for Olmsted County. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map.
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work under Activity 12 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Olmsted County shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Written certification that the digital data meet the minimum standards and specifications and
- Documentation that FEMA can use the digital base map.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 13 – DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: For all flooding sources except those segments for which updated flood data will be developed under Activities 1 through 11, Olmsted County shall convert the information not updated earlier in the MAS but shown on the effective FIRM and Flood Boundary Floodway Map (FBFM) panels for all incorporated and unincorporated areas of Olmsted County to digital format in conformance with FEMA DFIRM specifications. Olmsted County shall use the base map acquired under Activity 12 for the conversion. Olmsted County shall digitize or use delineations from updated hydraulic analyses for 43 FIRM panels. Olmsted County also shall incorporate the results of LOMCs issued by FEMA since the date of the current effective FIRM for each affected community.

Also, Olmsted County shall address all comments and questions regarding Activity 13 that are raised by the CTP contractor during the independent QA/QC review under Activity 13A.

Olmsted County shall not digitize the flood theme for those segments of flooding sources for which updated flood data will be developed. Rather, Olmsted County shall leave these as "holes" in the digital flood theme that will be filled in as part of Activity 14 using the digital flood data developed under Activities 10, 10A, and 10B.

Standards: All work under Activity 13 shall be performed in accordance with the standards specified in Section 5.

Deliverables: Upon completion of up to 43 panels, Olmsted County shall submit the panels to the MnDNR Waters CTP through the Olmsted County contractor for an independent QA/QC review under Activity 11. In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Olmsted County shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM, including a check that the road and floodplain relationship is maintained for all non-revised areas.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: MnDNR Waters CTP through Olmsted County

Scope: The CTP contractor shall review the DFIRM panels submitted by Olmsted County under Activity 13 to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the area mapped. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, checking the following:

- Cross sections were properly located and oriented as shown on the FIRM or FBFM.
- BFEs are properly located and agree with the BFEs shown on the FIRM.
- Regulatory floodway widths agree with the widths shown on the FIRM or FBFM.
- The 1 and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM and the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- For coastal studies, setup and runup height elevations shown on the work map agree with those shown on the data table(s), and stillwater elevations are shown where coastal and riverine flooding studied in detail join.

- Flood insurance risk zone designations are indicated properly.
- Road and floodplain relationships are maintained for all unrevised areas.
- DFIRM mapping files meet the GIS file and database format requirements specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those requirements for content and attribution.
- Metadata files describing the DFIRM data include the required information.

Standards: All work under Activity 13A shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the CTP contractor shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 14 –DFIRM Production (Merging Revised and Non-Revised Information)

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: Upon completion of the floodplain mapping activities for the revised areas (Activities 10, 10A, and/or 10B) and the DFIRM production for non-revised areas (Activity 13), Olmsted County shall merge the digital floodplain data into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in this MAS. Olmsted County also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in this MAS. Olmsted County shall coordinate with FEMA and those Mapping Partners responsible for Activities 10, 10A, 10B, and 13, as necessary, to resolve any potential tie-in issues.

Standards: All work under Activity 14 shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Olmsted County shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.
- Profiles and floodway data tables for streams identified in Activity 10 and updated profiles and floodway data tables as needed for preparation of a countywide FIS; format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners.*

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 14A – DFIRM Production (Application of DFIRM Graphics and Database Specifications)

Responsible Mapping Partner: MnDNR Waters through Olmsted County

Scope: Olmsted County shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Activity 14. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user). Olmsted County or the CTP contractor will be preparing the database for this project in the standard format. The database shall be produced in accordance with Appendix L of the Guides and Specifications for Flood Hazard Mapping Partners. Olmsted County shall coordinate with those Mapping Partners responsible for Activities 10, 10A, 10B, 13, and 14, as necessary, to resolve any problems that are identified during Activity 14A.

Standards: All work under Activity 14A shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Olmsted County shall make the following products available to FEMA by uploading the digital data to the MIP or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;

- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.
- NSP Format DFIRM Database or Data Delivery consistent with the NSP Data Capture Standards –Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Activity 14B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications

Responsible Mapping Partner: MnDNR Waters CTP through Olmsted County

Scope: Upon completion of the floodplain mapping activities (Activities 10, 10A, and/or 10B) and DFIRM production activities (Activities 13, 14, and 14A), the CTP contractor shall review the DFIRM to ensure it meets current FEMA graphic specifications. In addition, the CTP contractor shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. the CTP contractor shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- The FIS report is prepared in the FEMA countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners*.

Standards: All work under Activity 14B shall be performed in accordance with the standards specified in Section 5.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, the CTP contractor shall make the following products available to FEMA by uploading the digital data to the Multi-Hazard Information Platform (MIP) or submitting it to the FEMA Regional Office if the MIP is unavailable. This submittal will occur in accordance with the schedule outlined in Section 6 for this Activity.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.
- If the data changed during the QA/QC process, then the updated deliverables from Activities 10, 10A, 10B and Activities 13, 14, and 14A will be resubmitted at this time.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in the TSDN format in accordance with Appendix M of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf. Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Table 2-1. Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities															
	1	2	3	4	5	6, 6 A	7, 7 A	8	9	10, 10 A, 10 B	11	12	13, 13A	14, 14A	15	16
General Documentation																
Special Problem Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engineering Analyses																
Hydrologic Analyses			X			X	X	X	X	X	X					
Hydraulic Analyses			X			X	X	X	X	X	X					
Key to Cross-Section Labeling			X			X	X	X	X	X	X					
Key to Transect Labeling			X			X	X	X	X	X	X					
Draft FIS Report						X	X	X	X							
Mapping Information	X	X		X	X					X	X	X	X	X	X	X
Miscellaneous Reference Information	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SECTION 3—PERIOD OF PERFORMANCE

The mapping activities outlined in this MAS will begin on August 1, 2005, and will be completed no later than June 15, 2007. The mapping activities may be terminated at the option of FEMA or DNR Waters in accordance with the provisions of the Partnership Agreement dated February 5, 2005. If these Mapping Activities are terminated; the remaining funds from uncompleted activities, provided by FEMA for this Mapping Activity Statement, will be returned to FEMA.

SECTION 4—FUNDING/LEVERAGE

FEMA is providing funding, in the amount of [redacted] ters for the completion of this Flood Map Project. Olmsted County shall provide any additional resources required to complete the assigned activities for this Flood Map Project. During the scoping process, additional needs may be identified. Activities associated with any additional needs would be performed based on availability of additional funds. The CTP leverage amounts in Table 4-1 include both in-kind services and blue book values. More detailed leverage information will be determined during the detailed scoping process and reported back to FEMA at that time.

Table 4-1

Additional work needed to complete project		% of Project	Managed by	FEMA Contribution	CTP Contribution	% Leverage	Total Project Cost
Activity 1	Scoping	2.5%	CTP	[redacted]	[redacted]	1%	[redacted]
Activity 2	Outreach	2.5%	CTP	[redacted]	[redacted]	2.5%	[redacted]
Activity 3	Field Surveys and Reconnaissance	6.3%	CTP	[redacted]	[redacted]	%	[redacted]
Activity 6	Hydrologic Analyses	6.3%	CTP	[redacted]	[redacted]	0%	[redacted]
Activity 7	Independent QA/QC of Hydrologic Analyses	0.5%	CTP	[redacted]	[redacted]	0.5%	[redacted]
Activity 8	Hydraulic Analyses	20.0%	CTP	[redacted]	[redacted]	0%	[redacted]
Activity 9	Independent QA/QC Review of Hydraulic Analyses	1.3%	CTP	[redacted]	[redacted]	1%	[redacted]
Activity 10	Floodplain Mapping (Detailed Riverine or Coastal Analysis)	5.0%	CTP	[redacted]	[redacted]	0%	[redacted]
Activity 10A	Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	5.0%	CTP	[redacted]	[redacted]	0%	[redacted]
Activity 10B	Floodplain Mapping (Refinement or Creation of Zone A)	5.0%	CTP	[redacted]	[redacted]	0%	[redacted]

Activity 11	Independent QA/QC Review of Floodplain Mapping (Revised Areas)	1.3%	CTP	[redacted]	[redacted]	1%	[redacted]
Activity 12	Base Map Acquisition	0.5%	CTP	[redacted]	[redacted]	0.5%	[redacted]
Activity 13	DFIRM Production (Non-Revised Areas)	12.5%	CTP	[redacted]	[redacted]	12.5%	[redacted]
Activity 13A	Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	2.5%	CTP	[redacted]	[redacted]	0%	[redacted]
Activity 14	DFIRM Production (Merge Revised and Non-Revised Information)	12.5%	CTP	[redacted]	[redacted]	12.5%	[redacted]
Activity 14A	Application of DFIRM Graphic and Database Specifications	5.0%	CTP	[redacted]	[redacted]	5%	[redacted]
Activity 15	Preliminary DFIRM and FIS Report Distribution	1.3%	FEMA	[redacted]	[redacted]	0%	[redacted]
Activity 16	Post-Preliminary Processing	10%	FEMA	[redacted]	[redacted]	0%	[redacted]
			TOTALS	[redacted]	[redacted]	37%	[redacted]

FEMA funds identified above are available to be used for the following activities*:

Activities	FUNDABLE?
Activity 1 – Scoping	Yes, up to 10% of total cost
Activity 2 - Outreach	Yes, up to 10% of total cost
Activity 3 – Field Surveys and Reconnaissance	Yes
Activity 4 – Topographic Data Development	No, unless approval given during scoping phase by Regional PO
Activity 5 – Independent QA/QC Review of Topographic Data	No, unless approval given during scoping phase by Regional PO
Activity 6 –Hydrologic Analyses	Yes

Activities	FUNDABLE?
Activity 6A –Coastal Flood Hazard Analyses	Yes
Activity 7–Independent QA/QC Review of Hydrologic Analyses	Yes
Activity 7A–Independent QA/QC Review of Coastal Hazard Analyses	Yes
Activity 8 – Hydraulic Analyses	Yes
Activity 9 – Independent QA/QC Review of Hydraulic Analyses	Yes
Activity 10 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Yes
Activity 10A – Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	Yes
Activity 10B – Floodplain Mapping (Refinement or Creation of Zone A)	Yes
Activity 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Yes
Activity 12 – Base Map Acquisition	No
Activity 13 – DFIRM Production (Non-Revised Areas)	Yes
Activity 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	Yes
Activity 14 – DFIRM Production (Merge Revised and Non-Revised Information)	Yes
Activity 14A – Application of DFIRM Graphic and Database Specifications	Yes
Activity 14A – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	Yes
Activity 15 – Preliminary DFIRM and FIS Report Distribution	Yes
Activity 16 – Post-Preliminary Processing	Yes

*This table is for information purposes only

SECTION 5—STANDARDS

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* to be referenced for each mapping activity are summarized in Table 5-2.

These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_cgs.shtm.

Table 5-1. Applicable Standards for Project Activities

Applicable Standards	Activities															
	1	2	3	4	5	6, 6A	7, 7A	8	9	10, 10 A, 10 B	11	12	13, 13A	14, 14A	15	16
Guidelines and Specifications for Flood Hazard Mapping Partners, April 2003	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping Procedures	X		X	X	X											
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-510), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	X		X	X	X											
Engineer Manual 1110-1-1000, *Photogrammetric Mapping* (USACE), July 1, 2002	X		X	X	X											
Engineer Manual 1110-2-1003, *Hydrographic Surveys* (USACE), January 1, 2002	X		X													
"Numerical Models Accepted by FEMA for NFIP Usage," Updated April 2003	X					X	X	X	X							
Content Standard for Digital Geospatial Metadata (Federal Geographic Data Committee),	X	X		X	X					X	X	X	X	X	X	X